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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of	:	Customer Number: 46320
	:	
Timo SALO, et al.	:	Confirmation Number: 1045
	:	
Application No.: 10/026,387	:	Group Art Unit: 2162
	:	
Filed: December 21, 2001	:	Examiner: A. Ly
	:	
For:		DECENTRALIZED MANY TO MANY RELATIONSHIP MANAGEMENT IN AN OBJECT PERSISTENCE MANAGEMENT SYSTEM

**APPEAL BRIEF**

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed April 4, 2007, wherein Appellants appeal from the Examiner's rejection of claims 1-11.

**I. REAL PARTY IN INTEREST**

This application is assigned to IBM Corporation by assignment recorded on December 21, 2001, at Reel 012408, Frame 0810.

**II. RELATED APPEALS AND INTERFERENCES**

Appellants are unaware of any related appeals and interferences.

### **III. STATUS OF CLAIMS**

Claims 1-11 are pending and rejected in this Application. Claims 1-11 have been rejected multiple times, and it is from the multiple rejections of claims 1-11 that this Appeal is taken.

### **IV. STATUS OF AMENDMENTS**

The claims have not been amended subsequent to the imposition of the Sixth Office Action dated February 7, 2007 (hereinafter the Sixth Office Action).

### **V. SUMMARY OF CLAIMED SUBJECT MATTER**

Referring to Figure 1 and independent claim 1, in an object persistence management system 100, a many-to-many relationship manager is disclosed. The manager includes a plurality of related objects 108, 110, a junction table 102, and a plurality of corresponding decentralized links 104, 106 (page 11, line 16 through page 12, line 1 of Appellants' disclosure; see also page 14, lines 4-10 regarding the decentralized nature of links). The junction table 102 stores relationships between the related objects 108, 110 (page 12, lines 1-3). Each of the plurality of links 104, 106 correspond to one of the objects 108, 110 (page 11, lines 18-21). Also, each of the links 104, 106 persist state information for a corresponding object 108, 110 in an associated object table 112, 114 (page 11, lines 20-23). Moreover, each of the links 104, 106 manage the junction table 102 responsive to changing relationships with others of the related objects 104, 106 (page 12, lines 5-10).

Referring to Figure 2 and independent claims 5 and 8, a method of managing a many-to-many relationship in an object persistence management system is disclosed. In block 202, a

relationship change with a related object is detected (page 12, lines 20-21). In blocks 206/208, a directive specifying a management operation for changing the relationship in a junction table is stored in a buffer (page 13, lines 4-11). In block 212, a search is conducted for an opposite directive in a buffer associated with the related object (page 13, lines 15-18). In blocks 214, 216, the stored directive is performed only if the opposite directive has not been stored in the buffer associated with said related object (page 13, lines 19-22).

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

1. Claims 1-11 were rejected under the 35 U.S.C. § 101;
2. Claims 5 and 8-11 were rejected under the Second Paragraph of 35 U.S.C. § 112; and
3. Claims 5 and 8 were rejected under the First Paragraph of 35 U.S.C. § 112.

## **VII. ARGUMENT**

### **THE REJECTION OF CLAIMS 1-11 UNDER 35 U.S.C. § 101**

For convenience of the Honorable Board in addressing the rejections, claims 2-4 stand or fall together with independent claim 1; claims 6-7 stand or fall together with independent claim 5; and claims 9-11 stand or fall together with independent claim 8.

At the outset, Appellants note that the paragraph spanning pages 2 and 3 of the Sixth Office Action is a restatement of certain case law concerning 35 U.S.C. § 101. This paragraph, however, fails to include any analysis with regard to the present claims.

In the paragraph spanning pages 3 and 4, the Examiner asserted the following:

More specifically, the claimed subject matter provides for "managing said junction table responsive to changing relationships with others of said related object", and "performing said stored directive only if the opposite directive has not been stored in said buffer associated with said related object". This produced result remains in the abstract and thus, fails to achieve the required status of having real world value or to be realized as "useful result."

Appellants note that the specific claim language referred to by the Examiner is found in independent claims 5 and 8, but not in independent claim 1. Moreover, the Examiner's assertion that "[t]his result remains in the abstract" is conclusory without any accompanying analysis. Specifically, the Examiner has failed to explain why the result remains in the abstract.

The claimed step of "performing said stored directive only if the opposite directive has not been stored in said buffer associated with said related object" is akin to stating "perform directive X upon directive -X not being stored." The use of the phrase "only if ..." is to create a conditional logical argument (i.e., upon A, then perform B). Appellants are unclear as to the legal basis and/or analysis that supports the Examiner's assertion that "[t]his produced result remains in the abstract."

With regard to independent claim 1, in the first full paragraph on page 4 of the Sixth Office Action, the Examiner asserted the following:

Claim 1, "an object persistent [sic] management system" does not fall into one of 4 categories under 35 USC statutory subject matter. Thus is non-statutory.

The Examiner again makes a conclusory statement without any analysis for support. Moreover, claim 1 is not directed to "an object persistence management system," but instead a functional component (i.e., a many-to-many manager) of the system. Both the system and its components are devices that perform one or more functions. On the contrary, none of the exceptions to statutory subject matter (i.e., "laws of nature, physical phenomena, and abstract ideas") perform

functions. Moreover, a consequence of a function being performed is a result. As stated in Appellants' First Appeal Brief dated October 30, 2006, Appellants have asserted a credible utility, and since a credible utility is contained in Appellants' specification, the utility requirement of 35 U.S.C. § 101 (i.e., whether the invention produces a useful, concrete, and tangible result) has been met.

With regard to independent claims 5 and 8, in the second full paragraph on page 4 of the Sixth Office Action, the Examiner asserted the following:

Claims 5 and 8, in line 4 and line 8 of claim 5 and line 5 and 9 of claim 8, "buffer" is a temporary storage, which is a functional descriptive material or as descriptive per se.

Not only does this statement by the Examiner evidence a misunderstanding of what exactly constitutes "descriptive material," the Examiner has improperly analyzed only certain limitations claims 5 and 8. With regard to the Examiner's identification of certain limitations within claim 1 as being directed to non-statutory subject matter, the reference is made to M.P.E.P. § 2106(II)(A), which states:

Finally, when evaluating the scope of a claim, every limitation in the claim must be considered. Office personnel may not dissect a claimed invention into discrete elements and then evaluate the elements in isolation. Instead, the claim as a whole must be considered. See, e.g., *Diamond v. Diehr*, 450 U.S. at 188-89, 209 USPQ at 9 ("In determining the eligibility of respondents' claimed process for patent protection under 101, their claims must be considered as a whole. It is inappropriate to dissect the claims into old and new elements and then to ignore the presence of the old elements in the analysis. This is particularly true in a process claim because a new combination of steps in a process may be patentable even though all the constituents of the combination were well known and in common use before the combination was made."). (emphasis in original)

As readily apparent from the Examiner's own comments, the Examiner did not consider the scope of claim 1, as a whole, as required.

The Examiner's assertion that a "buffer" constitutes descriptive material (functional or not) is in error. Nonfunctional descriptive subject matter refers, for example, to an actual,

physical printout of a computer program or an actual, physical photograph or book. As is readily apparent, a buffer is not nonfunctional descriptive subject matter. Functional descriptive material, e.g., data structures, is nonstatutory when claimed as descriptive material *per se*.<sup>1</sup> However, as also apparent, the claims are not directed to descriptive material *per se*.

Although the Examiner describes a buffer as "temporary storage," Appellants note that the "temporary" portion of the phrase "temporary storage" describes the persistent nature of the data within the storage (i.e., the data is intended to temporarily reside in the storage). Moreover, although properly recognizing that a buffer is storage, the Examiner does not recognize that "storage" is a device and, thus, statutory subject matter.

Notwithstanding the Examiner's improper analysis of claim 5, independent claim 5 is directed to a method, which clearly falls within the statutory subject matter of 35 U.S.C. § 101. With regard to independent claim 8, the Examiner asserted the following in the third full paragraph on page 8:

Claim 8, "a machine readable storage" having stored thereon a computer program, which comprising a set of instructions (software *per se*) ... . That is, this program of instructions stored on a computer-readable medium or storage media causing (not positive or directly executed by a machine or a physical article or objects). Thus is also a **functional descriptive material**, a non-statutory subject matter. (emphasis in original)

At the outset, Appellants note that the Examiner's comments are nonsensical. For example, the Examiner's second sentence (i.e., "That is, this program ...") is not a proper sentence. The sentence includes a noun clause but no verb.

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<sup>1</sup> In re Warmerdam, 33 F.3d 1354, 1360, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994).

As stated in M.P.E.P. § 2106.01:

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized.

Even *assuming arguendo* that the claimed invention is directed to functional descriptive material, as asserted by the Examiner, claim 8 meets the requirements listed immediately above. Therefore, claim 8 is directed to statutory subject material.

The Examiner's comments in the last full paragraph on page 4 and in the first full paragraph on page 5 of the Sixth Office Action are essentially reproductions of paragraphs found on M.P.E.P. § 2106.01. Appellants do note, however, the Examiner's assertions found in the penultimate paragraph on page 4 of the Sixth Office Action and reproduced below:

The claims lack the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 USC 101. They are clearly not a series of steps or act to be a process nor are they a combination of chemical compounds to be a composition of matter. As such, they fail to fall within a statutory category. They are, at best, functional descriptive material per se.

As noted above, the Examiner's assertions in the first sentence, as applied to independent claim 1, is incorrect since claim 1 is directed to a system (i.e., a functional device). The Examiner's assertions in the second sentence, as applied to independent 5, is incorrect since claim 5 is directed to a method. The Examiner's assertions in the final sentence, as applied to all the claims, evidences both a lack of understanding of what constitutes "functional descriptive material per se" and a lack of understanding of the subject matter being claimed.

Reference is also made to the precedential decision by the Honorable Board is Ex parte Lundgren.<sup>2</sup> In Ex parte Lundgren, the claims at issues recited a method of compensating a

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<sup>2</sup> 76 USPQ2d 1385 (BPAI 2005).



manager of a business firm, which did not disclose or suggest a computer, automated means, or an apparatus of any kind. Despite this lack of a tie to "a machine or manufacture," the Honorable Board overturned a rejection of these claims based upon 35 U.S.C. § 101. Thus, the Examiner's analysis is unsound.

**THE REJECTION OF CLAIMS 5 AND 8-11 UNDER THE SECOND PARAGRAPH OF 35 U.S.C.**

**§ 112**

For convenience of the Honorable Board in addressing the rejections, claim 8 stands or falls together with claim 5, and claims 9-11 stand or fall together with claim 8.

On page 5 of the Sixth Office Action, with regard to independent claims 5 and 8, the Examiner asserted the following:

Claims 5 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Because these claims recite the limitation "performing said stored directive only **if** the opposite directive has not been stored in said buffer associated with said related object". It is incomplete or indefinite statement. (emphasis in original)

The Examiner's penchant for writing conclusory statements without accompanying analysis is evidenced again in this statement of the rejection. Appellants also question why the Examiner had not previously raised this issue in the five Office Action issued prior to the issuance of the Sixth Office Action. Specifically, the Examiner has not explained what has changed since the five previous Office Actions which has led the Examiner to believe the claim language is now ambiguous particularly since the phrase at issue was found in the originally-presented claims.

In this regard, Appellants respectfully submit that the Examiner has failed to establish a prima facie case of indefiniteness under the second paragraph of 35 U.S.C. § 112. As stated in M.P.E.P. § 2173.02:

If upon review of a claim in its entirety, the examiner concludes that a rejection under 35 U.S.C. 112, second paragraph, is appropriate, such a rejection should be made and an analysis as to why the phrase(s) used in the claim is "vague and indefinite" should be included in the Office action. (emphasis added).

As stated in Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings,<sup>3</sup> "[o]nly when a claim remains insolubly ambiguous without a discernible meaning after all reasonable attempts at construction must a court declare it indefinite." The Examiner, however, has not established an interpretation of the claim in light of the specification or an interpretation of the claim as interpreted by one of ordinary skill in the art. Moreover, the Examiner has failed to set forth any analysis as to why the limitation(s) in the claim does not reasonably define the invention. Without the Examiner clearly defining the alleged problem and why it is a problem in connection with the issue of claim definiteness, Appellants cannot fairly evaluate the Examiner's position.

Notwithstanding the Examiner's lack of analysis, Appellants have already addressed this particular clause with regard to the rejection under 35 U.S.C. § 101. The claimed step of "performing said stored directive only if the opposite directive has not been stored in said buffer associated with said related object" is akin to stating "perform directive X upon directive -X not being stored." The use the phrase "only if ..." is to create a conditional logical argument (i.e., upon A, then perform B). Appellants' position is that one having ordinary skill in the art would have no difficulty understanding the scope of claims 5 and 8, particularly when reasonably

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<sup>3</sup> 370 F.3d 1354, 1366, 71 USPQ2d 1081, 1089 (Fed. Cir. 2004).

interpreted in light of the written description of the specification.<sup>4</sup>

With regard to claims 8-11, the Examiner asserted the following in the ninth enumerated paragraph on page 5 of the Office Action:

Claims 8-11 recites the limitation "a machine readable storage" in the first line of claim 8, 9, 10, and 11. There is insufficient antecedent basis for this limitation in the claim. That is, it is not defined in the application specification.

As the outset, Appellants note that this is not a proper rejection under the second paragraph of 35 U.S.C. § 112. Moreover, Appellants have already addressed this "rejection" in the paragraph spanning pages 4 and 6 of the First Appeal Brief, in which Appellants argued:

On page 2 of the Fifth Office Action, the Examiner also objected to the specification with regard to claim 8, asserting that the specification "[fails] to provide proper antecedent basis for the subject matter." As noted by the examiner the terms and phrases used in the claims must find clear support or antecedent basis in the description so that meaning of the terms in the claims may be ascertainable. Appellants are unclear as to how or why the term "a machine readable storage" could be considered by the Examiner to be unclear. The term, "a machine readable storage," itself provides sufficient and clear support for the meaning of the term.

The specification is not required to define each and every term recited in the claims, particularly when the meaning of the term is self-evident from the term itself. A machine readable storage could, for example, be a DVD, a CD, a thumb drive, a hard drive, a floppy disk, and a memory chip. All of these devices are "machine readable storage." Therefore, Appellants are unclear as to why this particular term needs to be "defined in the application specification" since the meaning of this term is self-explanatory.

#### **THE REJECTION OF CLAIMS 5 AND 8 UNDER THE FIRST PARAGRAPH OF 35 U.S.C. § 112**

For convenience of the Honorable Board in addressing the rejections, claim 8 stands or falls together with claim 5.

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<sup>4</sup> In re Okuzawa, 537 F.2d 545, 190 USPQ 464 (CCPA 1976); In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

In the paragraph spanning pages 5 and 6 of the Sixth Office Action, the Examiner asserted the following:

Claims 5 and 8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Because the "**negative limitation**" in lines 7-8 of claim 5 and in line 8-9 of claim 8, "performing said stored directive only if **the opposite directive has not been stored** in said buffer associated with said related object." is not support in the instant specification. Any claim containing a negative limitation **must** have basis in the original disclosure. (MPEP 2173.05 (i)). Applicant is advised to amend the claim to clarify it and for their intended use in order to one of ordinary skill in the art to make use the invention as claimed. Applicant is reminded that no new subject matter should be added. (emphasis in original)

Reference is made to page 13, lines 14-22 of Appellants' disclosure, which is reproduced below:

If, however, in decision block 210, the state of the object managed by the primary link is to be persisted, in block 212, the buffers of each secondary link associated with the primary link in a many-to-many relationship can be inspected for counter-operations to those operations stored in the buffer of the primary link.

Where counter-operations in a secondary link are identified, both the primary link and secondary link can remove the operation and corresponding counter-operation from their respective buffers in step 214. Finally, in step 216, those remaining operations in the buffer of the primary link can be persisted to the junction table.

Thus, in block 212, a determination is made if there are "counter-operations" (i.e., opposite directive) in the buffers. In block 214, identified counter-operations are removed from the buffers. Then, upon (i.e., "if") no counter-operations being in the buffers, in block 216, the remaining operations (including the stored directive) are persisted (i.e., performed).

Appellants are unclear as to why the Examiner believes this limitation was not supported by the above-reproduced passage since in the First Appeal Brief, in the section entitled "Summary of the Claimed Subject Matter," Appellants referred to this passage while summarizing these particular claim limitations. Notwithstanding the Examiner's silence on this

prior explanation, Appellants submit that the limitation identified by the Examiner finds full support, within the meaning of the first paragraph of 35 U.S.C. § 112, in Appellants' originally-filed disclosure.

Conclusion

Based upon the foregoing, Appellants respectfully submit that the Examiner's rejections under 35 U.S.C. §§ 101, 112 is not viable. Appellants, therefore, respectfully solicit the Honorable Board to reverse the Examiner's rejections under 35 U.S.C. §§ 101, 112.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due under 37 C.F.R. §§ 1.17, 41.20, and in connection with the filing of this paper, including extension of time fees, to Deposit Account 09-0461, and please credit any excess fees to such deposit account.

Date: April 4, 2007

Respectfully submitted,

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## **VIII. CLAIMS APPENDIX**

1. In an object persistence management system, a many-to-many relationship manager comprising:

a plurality of related objects;

a junction table storing relationships between said related objects; and,

a plurality of corresponding decentralized links, each said link corresponding to one of said objects, each said link persisting state information for said corresponding object in an associated object table, and managing said junction table responsive to changing relationships with others of said related objects.

2. The many-to-many relationship manager of claim 1, further comprising a counter-operation management protocol performed in said corresponding links for removing conflicted state information in said corresponding links without persisting said conflicted state information in said junction table.

3. The many-to-many relationship manager of claim 2, wherein each of said corresponding links comprises a state management operations buffer, said buffer storing directives for adding selected key-pair entries to and removing selected key-pair entries from said junction table.

4. The many-to-many relationship manager of claim 3, wherein said counter-operation management protocol comprises an interface through which operations in said buffer and

corresponding counter-operations in associated buffers of related links can be identified and removed, each said counter-operation specifying a junction table management operation for a particular key-pair entry in said associated buffer which is opposite to an operation in said buffer which specifies a junction table management operation also for said particular key-pair entry.

5. A method of managing a many-to-many relationship in an object persistence management system comprising the steps of:

detecting a relationship change with a related object;

storing a directive in a buffer, said directive specifying a management operation for changing said relationship in a junction table; and,

searching for an opposite directive in a buffer associated with said related object; and,

performing said stored directive only if the opposite directive has not been stored in said buffer associated with said related object.

6. The method of claim 5, wherein said storing step comprises the step of storing a directive in said buffer which specifies one of adding or removing a key-pair entry in said junction table.

7. The method of claim 6, wherein said performing step comprises the steps of:

performing said specified adding or removing of said key-pair entry only if a corresponding opposite directive specifying a respective removing or adding of said key-pair entry is not detected in said buffer of said associated object; and,

responsive to detecting said corresponding opposite directive, removing both said directive and opposite directive from both said buffers.

8. A machine readable storage having stored thereon a computer program for managing a many-to-many relationship in an object persistence management system, the computer program comprising a routine set of instructions for causing the machine to perform the steps of:

detecting a relationship change with related object;

storing a directive in a buffer, said directive specifying a management operation for changing said relationship in a junction table;

searching for an opposite directive in a buffer associated with said related object; and,

performing said stored directive only if the opposite directive has not been stored in said buffer associated with said related object.

9. The machine readable storage of claim 8, wherein said storing step comprises the step of storing a directive in said buffer which specifies one of adding or removing a key-pair entry in said junction table.

10. The machine readable storage of claim 9, wherein said performing step comprises the steps of:

performing said specified adding or removing of said key-pair entry only if a corresponding opposite directive specifying a respective removing or adding of said key-pair entry is not detected in said buffer of said associated object; and,



responsive to detecting said corresponding opposite directive, removing both said directive and opposite directive from both said buffers.

11. The machine readable storage of claim 8, wherein both the directive and the corresponding opposite directive are unexecuted.

**IX. EVIDENCE APPENDIX**

No evidence submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132 of this title or of any other evidence entered by the Examiner has been relied upon by Appellants in this Appeal, and thus no evidence is attached hereto.

**X. RELATED PROCEEDINGS APPENDIX**

Since Appellants are unaware of any related appeals and interferences, no decision rendered by a court or the Board is attached hereto.